

2-1 Segment Bisectors

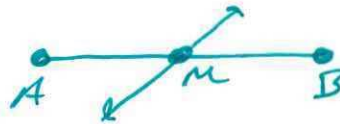
Objective: Bisect a segment and find the coordinates of the midpoint of a segment.

Midpoint: the point on a segment that divides it into two congruent segments
middle



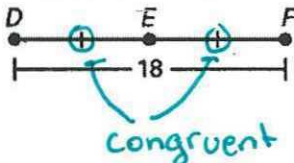
***Bisect:** to divide into two congruent parts
cut in half

Segment bisector: a segment, ray, line or plane that intersects a segment at its midpoint



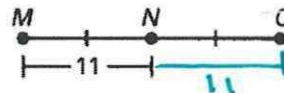
Examples:

1. Find DE and EF



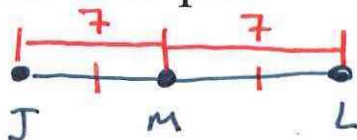
$\overline{DE} = 9$ $\overline{EF} = 9$

2. Find NO and MO



$\overline{NO} = 11$ $\overline{MO} = 22$

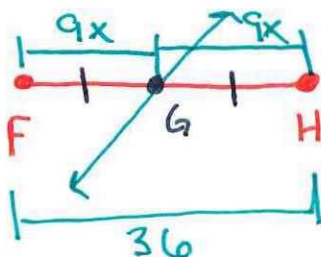
3. M is the midpoint of JL. Find ML and JL if JM = 7



$ML = 7$

$JL = 14$

4. Line s is a segment bisector of FH at point G. Find the value of x if $FG = 9x$ and $FH = 36$



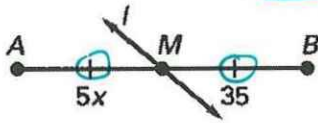
$FG + GH = FH$

$9x + 9x = 36$

$18x = 36$
 $\frac{18x}{18} = \frac{36}{18}$

$x = 2$

5. Line l is a segment bisector of AB . Find the value of x .



$$\frac{5x}{5} = \frac{35}{5}$$

$$x = 7$$

Midpoint Formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

memorize

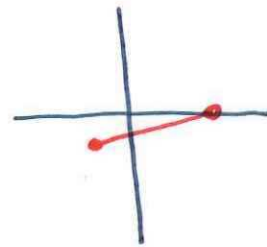
(x, y)

6. Find the coordinate of the midpoint of $(4, 0)$ and $(-3, -1)$

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{4 + (-3)}{2}, \frac{0 + (-1)}{2} \right)$$

$$\left(\frac{1}{2}, -\frac{1}{2} \right)$$



7. Sketch PQ then find the coordinates of the midpoint.

$P(2, 5), Q(4, 3)$

$x_1, y_1 \quad x_2, y_2$

$$\left(\frac{2+4}{2}, \frac{5+3}{2} \right)$$

~~$$\left(\frac{6}{2}, \frac{8}{2} \right)$$~~

$$\left(\frac{6}{2}, \frac{8}{2} \right) \quad (3, 4)$$

